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REMARKSDrawings

The Examiner requested that the drawings show "the walker." This element has been added to Figure 21 with the understanding that it may have been included in other drawings as well. Presumably this overcomes the rejection under 37 CFR 1.83(a).

Claim Rejections

Claims 1-40, 47 and 48 stand rejected under 35 U.S.C. §112, first paragraph, as failing to comply with the enablement requirement. The Examiner has listed numerous factors on page 3 of the Office Action. With regard to (1), the Examiner believes that the specification does not adequately disclose a specific pump system, pheromone, walker apparatus, type of sensor or control system. Applicant counters this in several ways. First, enclosed herewith as part of a supplemental information disclosure statement, are a dissertation from one of the inventors, namely, Mr. Bruckner, entitled "Return from the Ant"; an article co-authored by another one of the inventors, Dr. H. VanDyke Paranak entitled "Digital Pheromones for Autonomous Coordination of Swarming UAV's"; and an article authored by the inventors Bruckner and Paranak entitled "Multiple Pheromones for Improved Guidance." In addition to these references, which should address some of the Examiner's concerns regarding this aspect of enablement, the Examiner will note that independent claims 1, 21 and 34 have been amended to limit the implementation to software components executed in a purely digital environment. Although, as explained on page 2 of the specification, that non-digital environments, such as chemical deposits with distinguishable composition, are also possible and fall within the purview of this invention, in the preferred embodiment, a "pheromone" is a packet of digital information. Likewise, the other components in this particular embodiment are pieces of software, or applets, that execute in a distributed digital computational environment. Applicant believes that this should clear up most of the misunderstandings set forth by the Examiner.

With regard to (2), the nature of the invention, the Examiner contends that the lack of prior art provides evidence as to the high degree of unpredictability, and asserts that it is unclear how the pump system, walker apparatus and associated sensor system are cooperatively associated. With regard to the

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first point, the materials newly submitted herewith should provide the Examiner with a greater foundational understanding of the genesis of this invention. Although research into digital "ants" and digital "pheromones" and the like, is limited to a rather select intellectual community, the fact that previous papers have been written in regard to this subject, along with conferences wherein information has been presented on these topics, should demonstrate to the Examiner that there is at least a certain degree of predictability in this field of endeavor. With regard to the pump system, walker apparatus, sensors and so forth, the operation of these components are explained in exquisite detail in the instant specification. The Examiner is invited to reread, for example, at least the section entitled "An Agent System - Pheromone Architecture," which begins on page 25 of the specification, to the bottom of page 45, wherein pumps, walkers and pheromone activities are considered.

Regarding (3), again, given the background materials submitted herewith, the specification as filed does indeed offer sufficient direction or guidance required to meet the enablement requirement under MPEP §2164.05(a).

Regarding (4), the level of skill of one of ordinary skill in the art, Applicant disagrees that the specification fails to bridge the gap between the level of skill of one of ordinary skill in the art as evidenced by the prior art. Again, although those familiar with these types of inventions represent a relatively small community, those within that community do, nevertheless, share a common understanding about the genesis of this particular type of subject matter.

Regarding (5), the level of predictability in the art, Applicants disagree for the reasons set forth above. Again, the Examiner is invited to reread the instant specification in view of the newly submitted prior art references to gain a more profound understanding as to the nature of the invention.

Regarding (6), the amount of direction provided by the inventor, Applicants disagree that the specification needs to provide more direction and guidance as to how to make and use the claimed invention. In particular, the Examiner claims that it is unclear how the pump and system and walker apparatus are cooperatively associated, which would enable the claimed system to operate properly. In view of the amendments submitted herewith, limiting the implementation to a digital environment including digital pheromones and agents, and so forth in the form of software components, Applicant believes all of the requisite conditions have been met. To one of ordinary skill in the art, even without a thorough understanding of digital ants and the like, given the extensive detailed description of the way

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in which the various components interact, it would be well within the purview of one of ordinary skill in the art to implement a system without undue experimentation.

Regarding (7), the existence of working examples, again, Applicants disagree that the invention is not disclosed in such a manner that one skilled in the art would be able to practice the claimed invention without undue experimentation. Indeed, the Applicants *have* implemented working systems, and contend that others of skill in the art would be able to do the same. Regarding the Examiner's questions regarding volatile chemical compounds, gas sensors, and spectrophotometers, and the like, these concerns should be rendered moot in view of the amendment submitted herewith.

Regarding (8), the quality of experimentation needed, again, given the amendments submitted herewith, the Examiner's concerns about the need to set up some type of chemical environment in order to implement physical pheromones, hardware sensors/detectors and the like, should now be obviated. Given that all of the various components interact within a digital computing environment, one of ordinary skill in the art would clearly know how to implement these features.

Based upon the foregoing amendments and comments, Applicant believes all claims are now in condition for allowance or, at the very least, in condition for substantive examination on the merits. To expedite prosecution, the Examiner is invited to contact the undersigned attorney by phone, fax or electronic mail.

Respectfully submitted,

By: 

John G. Posa

Reg. No. 37,424

Gifford, Krass, Groh, Sprinkle,
Anderson & Citkowski, PC

280 N. Old Woodward Ave., Ste 400
Birmingham, MI 48009

(734) 913-9300 FAX (734) 913-6007

Email: jposa@patlaw.com

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